

Remarks

The Office Action dated August 30, 2005 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1-17 and 19-29 are now pending in this application. Claims 1-29 stand rejected. Claim 18 has been canceled.

The rejection of Claim 14 under 35 U.S.C. § 112, second paragraph is respectfully traversed. Claim 14 has been amended to recite “[a]n imaging system comprising a gantry unit having an x-ray source for generating x-rays and a CZT detector configured to detect emission gamma photons and transmission x-ray photons, and a C-arm configured to move the x-ray source and detector along an image acquisition path between at least first and second imaging positions.” Applicants respectfully submit that amended Claim 14 satisfies the requirements of Section 112, second paragraph.

The rejection of Claims 1 and 3-13 under 35 U.S.C. § 102(e) as being anticipated by Eisenberg et al. (U.S. Patent Application No. 2003/0128801) “Eisenberg” is respectfully traversed.

Eisenberg describes a multi-modality imaging system that can be utilized in the volume computed tomography (VCT) mode, the single photon emission computed tomography (SPECT) mode and the positron emission tomography (PET) mode. In the VCT mode of operation, three (3) x-ray sources and associated detectors can be utilized. In the SPECT and PET modes of operation, the gamma radiation is provided by an isotope ingested by the patient and is detected by the detectors angularly spaced around the patient. A fused imaging analysis and computer aided diagnosis system is provided and processes the images produced by the multi-modality imaging system. The fused images are analyzed and the fused image data are compared with disease process models to provide feedback to the patient and medical professionals in the form of four dimensional displays and interactive image visualizations.

Claim 1 recites a method of examining a patient wherein the method includes “aligning a patient table in an opening of a gantry that includes a CZT photon detector and an x-ray source...imaging a patient utilizing a first imaging modality during a first portion of a

scan using the CZT detector...imaging a patient utilizing a second imaging modality during a second portion of the scan using the CZT detector wherein the second imaging modality is different than the first imaging modality.”

Eisenberg does not describe nor suggest a method of examining a patient as recited in Claim 1. Specifically, Eisenberg does not describe nor suggest imaging a patient utilizing a first imaging modality during a first portion of a scan using the CZT detector and imaging a patient utilizing a second imaging modality during a second portion of the scan using the CZT detector wherein the second imaging modality is different than the first imaging modality. Rather, in contrast to the present invention, Eisenberg describes a multi-modality imaging system that can be utilized in the volume computed tomography (VCT) mode, the single photon emission computed tomography (SPECT) mode and the positron emission tomography (PET) mode, but Eisenberg does not describe nor suggest imaging a patient utilizing a first imaging modality during a first portion of a scan and imaging the patient utilizing a second imaging modality during a second portion of the scan. For at least the reasons set forth above, Claim 1 is submitted to be patentable over Eisenberg.

Claims 3-13 depend from independent Claim 1. When the recitations of Claims 3-13 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 3-13 likewise are patentable over Eisenberg..

The rejection of Claims 2, and 14-17, and 19-29 under 35 U.S.C. § 103(a) as being unpatentable over Eisenberg et al. (U.S. Patent Application No. 2003/0128801) “Eisenberg” in view of Silver et al. (U.S. Patent 6,466,638) “Silver” is respectfully traversed.

Eisenberg is described above. Silver describes a method and system for reconstructing an x-ray image through mapping. The system rotates an x-ray source and an x-ray detector in an irregular path. A calibration factor matrix for each position of a source and detector is calculated using a calibration phantom and then stored for use during reconstruction. The image is reconstructed by mapping a reprojected image point from a known coordinate using the calibration factors. The mapping takes into consideration the non-idealities in the irregular path, improving the image reconstruction.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that

it would have been an obvious to one of ordinary skill in the art to modify Eisenberg according to the teachings of Silver. More specifically, it is respectfully submitted that a prima facie case of obviousness has not been established. As explained by the Federal Circuit, “to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant.” In re Kotzab, 54 USPQ2d 1308, 1316 (Fed. Cir. 2000). MPEP 2143.01.

Moreover, the Federal Circuit has determined that:

[I]t is impermissible to use the claimed invention as an instruction manual or “template” to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that “[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.”

In re Fitch, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992). Further, under Section 103, “it is impermissible . . . to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.” In re Wesslau, 147 USPQ 391, 393 (CCPA 1965). Rather, there must be some suggestion, outside of Applicants’ disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants’ disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion nor motivation to combine the cited art, nor any reasonable expectation of success has been shown.

Although Applicants agree with the assessment in the Office Action that Eisenberg does not describe and fails to teach or fairly suggest the gantry comprising a C-arm unit, Applicants respectfully disagree with the assertion that Eisenberg describes imaging a patient utilizing a first imaging modality during a first portion of a scan and imaging the patient utilizing a second imaging modality during a second portion of the scan. Rather, in contrast to the present invention Eisenberg describes a multi-modality imaging system that can be utilized in the volume computed tomography (VCT) mode, the single photon emission computed tomography (SPECT) mode and the positron emission tomography (PET) mode.

As such, the combination of Eisenberg and Silver collectively fails to teach each of the elements of the claimed invention. For at least the reasons set forth above, Claims 2, 14-17, and 19-29 are submitted to be patentable over Eisenberg in view of Silver.

Applicants also submit that Silver is non-analogous art that is not relevant to the Eisenberg application. More specifically, Silver describes a cone beam CT systems implemented using a C-arm to support only an x-ray source device and an x-ray detection device. Although Silver mentions the system operates by emitting x-rays that then pass through a subject, are detected and exposure data is collected by the processing system wherein an image is reconstructed using a mapping technique with calibration factors that compensate for non-idealities in the C-arm gantry motion, Silver does not address issues related to a multi-modality imaging system that can be readily utilized in three operational modes, such as volume computed tomography (VCT), nuclear medicine/single photon emission computed tomography (NM/SPECT) and positron emission tomography (PET). For example, Silver does not describe or teach a multi-headed source and detection system wherein ideally, three x-ray sources and associated detectors are utilized in the VCT mode of operation and in the NM/SPECT and PET modes of operation, the gamma ray radiation is produced by an isotope ingested by the patient and is detected by the detectors angularly spaced around the patient. Silver only describes a single detector mounted on the C-arm and that the system is only operable in a single modality, namely CT.

Given the obvious differences between a cone beam CT systems implemented using a C-arm to support only an x-ray source device and an x-ray detection device, and a multi-modality imaging system that can be readily utilized in three operational modes, such as VCT, NM/SPECT, and PET, and the fact that the system described by Silver neither recognizes nor solves any of the problems addressed by the Eisenberg application, it is respectfully submitted that Silver is non-analogous art that would not be looked to for potential solutions in a multi-modality imaging system and therefore there is no motivation to combine Silver with Eisenberg.

Moreover, Applicants submit that there is no teaching nor suggestion in the cited art for the claimed combination, and as such, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Specifically, Eisenberg is cited for its alleged

teaching of the claimed invention except for a C-arm gantry, and Silver is cited for its teaching of a C-arm gantry. Of course, such a combination, based on hindsight reconstruction, is impermissible, and for this reason alone, Applicants request that the Section 103 rejection of Claims 2, 14-17, and 19-29 be withdrawn.

Furthermore, Applicants respectfully submit that no motivation for the combination can be found within Eisenberg and Silver, as Eisenberg and Silver teach away from each other. Specifically, Eisenberg describe a multi-modality imaging system can be readily utilized in three operational modes such as VCT, NM/SPECT, and PET using a multi-headed source and detection system, and Silver describe an CT imaging system that uses a C-arm gantry.

If art “teaches away” from a claimed invention, such a teaching supports the nonobviousness of the invention. U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v. S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed invention. More specifically, Applicants respectfully submit that Eisenberg teaches away from Silver, and as such, there is no suggestion or motivation to combine Eisenberg with Silver.

Moreover, no combination of Eisenberg and Silver, describes or suggests the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 1 recites a method of examining a patient wherein the method includes “aligning a patient table in an opening of a gantry that includes a CZT photon detector and an x-ray source...imaging a patient utilizing a first imaging modality during a first portion of a scan using the CZT detector...imaging the patient utilizing a second imaging modality during a second portion of the scan using the CZT detector wherein the second imaging modality is different than the first imaging modality.”

Neither Eisenberg nor Silver, considered alone or in combination, describe or suggest a method of imaging a patient that includes imaging a patient utilizing a first imaging modality during a first portion of a scan using the CZT detector and imaging the patient utilizing a second imaging modality during a second portion of the scan. Rather, in contrast to the present invention, Eisenberg describes a multi-modality imaging system that can be

utilized in the volume computed tomography (VCT) mode, the single photon emission computed tomography (SPECT) mode and the positron emission tomography (PET) mode and Silver describes an CT imaging system that uses a C-arm gantry, but neither Eisenberg nor Silver, considered alone or in combination, describe or suggest a method of imaging a patient that includes imaging a patient utilizing a first imaging modality during a first portion of a scan using the CZT detector and imaging the patient utilizing a second imaging modality during a second portion of the scan. For at least the reasons set forth above, Claim 1 is submitted to be patentable over Eisenberg in view of Silver.

Claim 2 depends from independent Claim 1. When the recitations of Claim 2 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 2 likewise is patentable over Eisenberg in view of Silver.

Claim 14 recites an imaging system including “a gantry unit having an x-ray source for generating x-rays and a CZT detector configured to detect emission gamma photons and transmission x-ray photons, and a C-arm configured to move the x-ray source and detector along an image acquisition path between at least first and second imaging positions.”

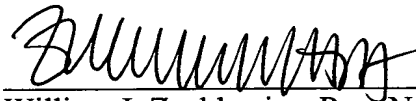
Neither Eisenberg nor Silver, considered alone or in combination, describe or suggest an imaging system including a gantry unit having an x-ray source for generating x-rays and a CZT detector configured to detect emission gamma photons and transmission x-ray photons, and a C-arm configured to move the x-ray source and detector along an image acquisition path between at least first and second imaging positions. Rather, in contrast to the present invention, Eisenberg describes a multi-modality imaging system that can be utilized in the volume computed tomography (VCT) mode, the single photon emission computed tomography (SPECT) mode and the positron emission tomography (PET) mode and Silver describes an CT imaging system that uses a C-arm gantry, but neither Eisenberg nor Silver, considered alone or in combination, describe or suggest an imaging system including a gantry unit having an x-ray source for generating x-rays and a CZT detector configured to detect emission gamma photons and transmission x-ray photons, and a C-arm configured to move the x-ray source and detector along an image acquisition path between at least first and second imaging positions. For at least the reasons set forth above, Claim 14 is submitted to be patentable over Eisenberg in view of Silver.

Claims 15-17 and 19-29 depend from independent Claim 14. When the recitations of Claims 15-17 and 19-29 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claims 15-17 and 19-29 likewise are patentable over Eisenberg in view of Silver.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 2, 14-17, and, 19-29 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully submitted,



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